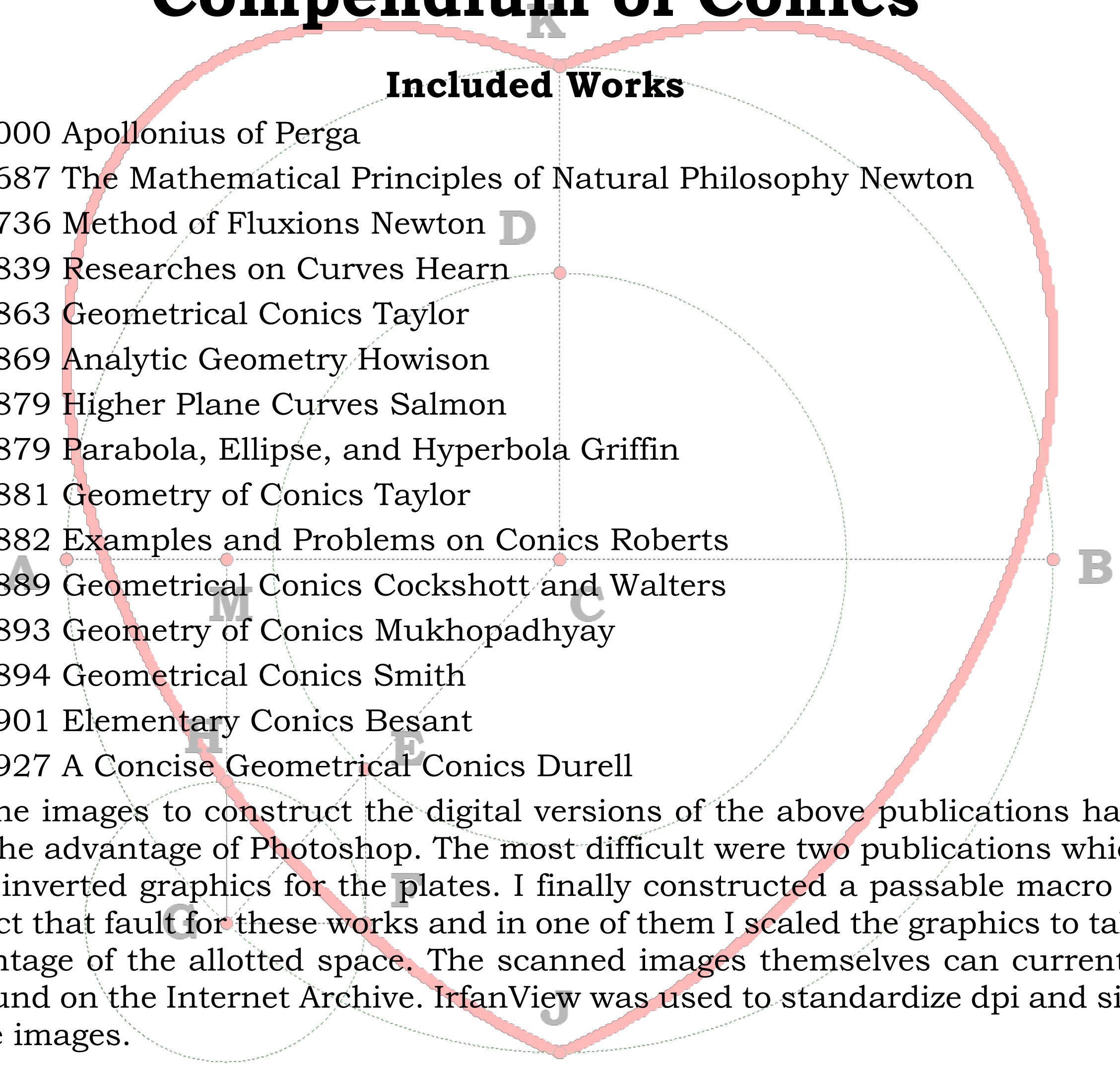
Compendium of Conics



Included Works

0000 Apollonius of Perga
1687 The Mathematical Principles of Natural Philosophy Newton
1736 Method of Fluxions Newton
1839 Researches on Curves Hearn
1863 Geometrical Conics Taylor
1869 Analytic Geometry Howison
1879 Higher Plane Curves Salmon
1879 Parabola, Ellipse, and Hyperbola Griffin
1881 Geometry of Conics Taylor
1882 Examples and Problems on Conics Roberts
1889 Geometrical Conics Cockshott and Walters
1893 Geometry of Conics Mukhopadhyay
1894 Geometrical Conics Smith
1901 Elementary Conics Besant
1927 A Concise Geometrical Conics Durell

The images to construct the digital versions of the above publications have had the advantage of Photoshop. The most difficult were two publications which used inverted graphics for the plates. I finally constructed a passable macro to correct that fault for these works and in one of them I scaled the graphics to take advantage of the allotted space. The scanned images themselves can currently be found on the Internet Archive. IrfanView was used to standardize dpi and size of the images.

The above examples were not chosen by any merit that they may have, but because they are simple available on the Internet Archive.

And for a standard for study

2020 Basic Analog Grammar by me which is the product of Microsoft Word 2003, Geometer’s Sketchpad version 4 and Mathcad 15.

The Conic

John’s Learning Project.

Introduction

Wednesday, October 27, 2021

About a month ago, I was working on doing another revision of *The Delian Quest*. For each revision I aim at finishing up write-ups originally set aside for a later date. When I ran across some plates from *Two New Sciences* by Galileo that was in an earlier version of the DQ. I decided that *Two New Sciences* required its own study project and stay gone from the DQ, so, I took some time out and did a study portfolio and posted it on the Internet Archive. Galileo's work with conics led me to an old project, etc., etc.

I ended up with a project called a *Compendium of Conics*, by which I have the intention of learning what conics have been all about. The *Compendium of Conics* gives me a kind of source-book for Conics to refer to, and practice with. Or a whole box-full of neat stuff to play with.

I was surprised at the primitive state of affairs with the whole matter in light of what Plato called *starting a work by defining your terms*. Not one of the authors of this Compendium could even produce a defining figure by which their work on conics proceeded from, no basic geometric figure. Some spoke of it as a descendent of cylinders and cones, as if it were schizophrenic, or maybe was born in a wood-chippers shop and with the proper saw and stuff, one can cut away and produce them to trace out on paper with. And others jabbering about points taking trips to some alternate reality called infinity. The gibberish about the whole thing is rather frightening. Grown people talking like they were infants. How many of them realized that the terms Parabola, Ellipse, and Hyperbola are not three distinct figures, but divisions of a single figure using the simple notion of that ratio being equal to 1, less than 1 and greater than 1. No new figure is created, these are just categories of ratio's. There are not many Conics, unless one is referring to books written about *The Conic* a synonym for the application of the simple ratio in situ.

So, before I set out on my study, I had to figure out how to simply draw the thing and how it is just a manifestation using a simple ratio. How is it that scholars who write books, educated in the finest Universities and Colleges, and not know that every possible ratio is expressible between 0 and 1? The ratio is a particular method of utilizing simple binary recursion.

There is a lot of nice material done on conics, it is just that the authors do not seem to know how to talk or write in a sensible manner. I am sure, if they had noticed it, their work might have been spectacular instead of a chest of things one has to dig through.

At any rate, with a given unit, and a given ratio, the entire topic of conics is derived. There is no nonsense about a directrix, or even spandex. Conics is the study of the curve which ranges from a straight line to a point. So, proceed to Chapter 1 and see how easy it should be.

I had all of the included works in this set bookmarked in Adobe, but while going through them, I found something odd. Some pages, and some text, were badly skewed but, on examining the original images, they are fine. It is Abby FineReader 12. If the Deskew check box is checked, apparently, some pages images are French, and Abby seems to think it means de Skew, and it acts accordingly and adds skewing to the image.

I had to reprocess all the work in Abby, with the check box not checked.

Contents

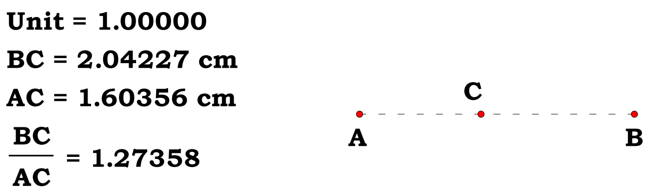
Introduction 3

Contents 5

Chapter 1 Definition of Conic 6

Chapter 1 Definition of Conic

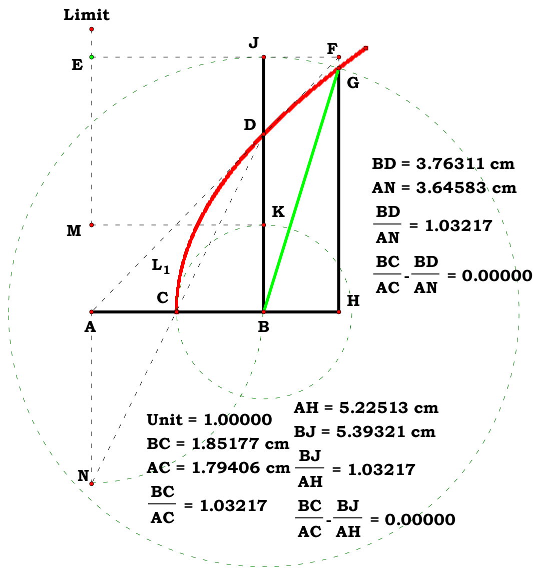
1. A conic is constructed using the unit and eccentricity in order to produce curves all the way from a straight line down to a single point. This ratio, called e. The sum of the denominator and numerator of e is always 1.



2 Eccentricity is a fixed ratio applied to a perpendicular.

Let AB be the Unit.

Let $\frac{BC}{AC}$ be the eccentricity. BC added to AC is 1.


Limit
E
J
F
G
D
BD = 3.76311 cm
AN = 3.64583 cm
$\frac{BD}{AN}$ = 1.03217
K
M
L_1
$\frac{BC}{AC}-\frac{BD}{AN}$ = 0.00000
C
H
A
B
Unit = 1.00000
BC = 1.85177 cm
AC = 1.79406 cm
$\frac{BC}{AC}$ = 1.03217
AH = 5.22513 cm
BJ = 5.39321 cm
$\frac{BJ}{AH}$ = 1.03217
$\frac{BC}{AC}-\frac{BJ}{AH}$ = 0.00000
N

Construct AN equal to AB and with BC construct BK.

With CN construct DN. Construct a limiting segment MLimit. Upon MLimit construct any point E. Construct EF perpendicular to AE. With D produce AD to F.

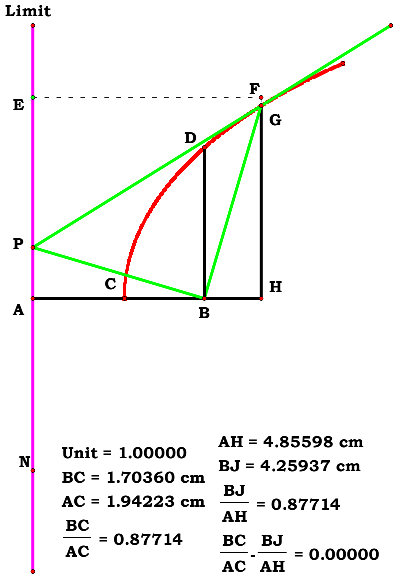
Construct FH perpendicular to AB. Construct the circle BJ. BG will then be equal to BJ.

If BF is greater than BG, then G will be a point on the conic. L_1.

One can see that what is called that *Latus Rectum*, BD, is a fundamental projection in construction. Or, again, as AN equals the unit, the *Latus Rectum* is actual perceptible ratio.

After one does the basic construction, one can hide that starting constructs, dress it up, and start illustrating things line the tangent GP.

So, this is how I start my study using the Compendium of Conics.


Limit
E
F
G
D
P
C
H
A
B
N
Unit = 1.00000
BC = 1.70360 cm
AC = 1.94223 cm
$\frac{BC}{AC}$ = 0.87714
AH = 4.85598 cm
BJ = 4.25937 cm
$\frac{BJ}{AH}$ = 0.87714
$\frac{BC}{AC}-\frac{BJ}{AH}$ = 0.00000